

5. A rectangular field will be fenced on all four sides. There will also be a line of fence across the field, parallel to the shorter side. If 900 m of fencing are available, what dimensions of the field will produce the maximum area? What is the maximum area?

Dimensions: 225m x 150m

Max area: 33,750 m²



$$A = xy$$

$$A(x) = x \left(\frac{900 - 2x}{3} \right)$$

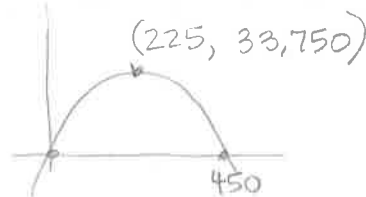
$$2x + 3y = 900$$

$$y = \frac{900 - 2x}{3}$$

$$x\text{-int: } (0,0) \quad (450,0)$$

$$900 - 2x = 0$$

$$x = 450$$



$$2(225) + 3y = 900$$

$$3y = 450$$

$$y = 150$$

6. A rectangular lawn is 8x4 meters ~~is and~~ is surrounded by a flowerbed of uniform width. The combined area of the lawn and the flowerbed is 165 m². What is the width of the flowerbed?

Let x = width of the flower bed

$$(2x+4)(2x+8) = 165$$

$$4x^2 + 24x + 32 = 165$$

$$4(x^2 + 6x + 9) = 133 + 36$$

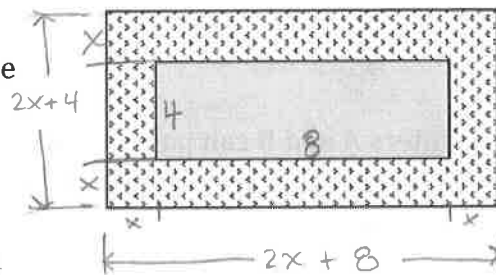
$$\frac{4(x+3)^2}{4} = \frac{169}{4}$$

$$x+3 = \frac{13}{2}$$

$$x = \frac{13}{2} - \frac{6}{2}$$

$$x = \frac{7}{2}$$

$$\text{width} = 3.5 \text{ m}$$



Factor the following:

$$(27x^3 - 8y^3)$$

$$(3x)^3 - (2y)^3$$

$$(3x-2y)(9x^2 + 6xy + 4y^2)$$

$$(27x^3 + 8y^3)$$

$$(3x)^3 + (2y)^3$$

$$(3x+2y)(9x^2 - 6xy + 4y^2)$$

$$2x^2 - 8x - 42$$

$$2(x^2 - 4x - 21)$$

$$2(x-7)(x+3)$$

$$4x^2 - 10x - 24$$

$$2(2x^2 - 5x - 12)$$

$$2(2x+3)(x-4)$$

$$64x^2 - 81$$

$$(8x+9)(8x-9)$$

$$6x^2 - 13x + 5$$

$$(3x-5)(2x-1)$$

$$12x^3 + 2x^2 - 30x - 5$$

$$2x^2(6x+1) - 5(6x+1)$$

$$(6x+1)(2x^2-5)$$

$$6x^3 - 16x^2 + 21x - 56$$

$$2x^2(3x-8) + 7(3x-8)$$

$$(3x-8)(2x^2+7)$$